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that large amplitude step changes are excessively steep to provide the desired control over the plasma to achieve the desired workpiece shapes; page 6, lines 3-10 of appellants' application as filed. Her comment that the specific time period to which power remains at constant wattage and the amount of power change is obvious because optimum results can be made through routine experimentation is without foundation and ignores the fact that Chao et al. has no disclosure of step changes or any changes in power during BCR processing. In addition, the parameters set forth in claims 54 and 65 are not a matter of routine experimentation. There is no suggestion in Chao et al. for step changes as set forth in claims 54 and 65, and in particular there is no suggestion of the specific parameters set forth in these claims. 35 USC 103(a) specifically states that the manner in which an invention is made shall not negate patentability.

## **II. RESPONSE TO EXAMINER'S ANSWER**

### **A. Appellants' response to examiner's Response to Argument vis-à-vis the rejection under 35 USC 112, first paragraph**

The sentence bridging pages 10 and 11 of the Examiner's Answer alleges page 15, line 8-page 17, line 25 of Appellant's specification discloses more than one etching step. The following sentence of the Examiner's Answer states that the portion of the specification referred to previously by appellants' remarks and by the declaration of Dr. Bailey are only directed to the last/final etching step. While these statements in the Examiner's Answer are true, they ignore the fact that the only etching operation described in the specification in connection with the limitation of independent claims 47 and 59, that require gradually changing AC power supplied to the plasma during etching of the workpiece to form a desired shape, is in connection with forming rounded corner 216 between point 212 and base 214, figure 6. The etching steps other than etching the workpiece to form rounded corner 216 are described in the first full paragraph on page 15 and continue to page 16, line 25. The discussion of each of these etching steps

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specifically mentions a single value for the powers supplied to coil 40 and electrode 56 or indicates conventional etching techniques are employed. Consequently, the foregoing sentences on page 10 and 11 of the Examiner's Answer are irrelevant to claims 47 and 59, which are limited to making a gradual transition in the shape of the material by employing a gradual power change.

The paragraph at the top of page 11 of the Examiner's Answer states: "However, the examiner respectfully submits that there is no written description for the absolute limitation of the etchant material **always** being the dominant material since clearly the rounded corners can be formed if the etchant material is not the dominant material 100% of the time (emphasis in original)". The examiner provides no proof to support this position, which is irrelevant to what is in appellants' disclosure. In addition, it is contrary to the statement in appellants' specification that a suitable mixture of HBr/O<sub>2</sub> constantly flows from source 68 into chamber 40 while the power which amplifier 132 supplies to electrode 56 gradually changes from 200 W to 100 W. Dr. Bailey has testified that this statement in appellants' specification would be interpreted by one of ordinary skill in the art to mean HBr is always dominant over the O<sub>2</sub> passivation gas during the 15 second etch operation when the power supplied to electrode 56 gradually changes from 200 W to 100 W. In contrast to the bald statement made by the examiner, Dr. Bailey provides rationale as to why one of ordinary skill in the art would have interpreted appellants' specification as set forth above. The last two sentences of Paragraph 3(b) of the May 2007 Declaration state: "Otherwise, material in the passivation gas would be deposited on the workpiece and would have a greater effect on the material being worked than the etchant gas. As a result, the rounded corner, i.e., edge, illustrated in Fig. 6 would not have been formed."

**B. Appellants' response to examiner's Response to Argument vis-à-vis the rejection under 35 USC 103 based on Chao et al.**

The second sentence of the paragraph bridging pages 11 and 12 of the

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Examiner's Answer, in connection with the rejection of claims 38-44, states: "However, the reference clearly discloses the relationship between rounding the trench corners and increasing the power (see paragraph 0049). As discussed supra in part I of this paper, paragraph 0049 of Chao et al. does not disclose increasing the power applied to the plasma while a rounded corner is being formed. In addition, the foregoing statement in the Examiner's Answer ignores the requirement of claim 42 for gradually changing the power applied to the etchant plasma while the rounded corner is being formed, and wherein the gradual changes are such that the power does not remain constant for durations in excess of one second while a rounded corner is being formed. The limitation concerning gradual changes in claim 42 is also ignored in the discussion of claim 42 and the first full paragraph on page 5 of the Examiner's Answer.

The second full paragraph on page 5 of the Examiner's Answer admits Chao et al. "does not expressly disclose gradually changing the power applied to the etchant plasma such that the power does not remain constant for durations in excess of one second". The subsequent statement on page 5 and the similar statement in the first full paragraph on page 12 of the Examiner's Answer that it would have been obvious to one of ordinary skill in the art to determine through routine experimentation the manner in which the power is changed are incorrect. Appellants have in part I of this paper demonstrated the advantages of gradually changing the power applied to the etchant, as defined in claim 42, over the technique employed by Chao et al.. The examiner has provided no rationale as to why one of ordinary skill in the art would have rounded a corner by making the gradual power change claim 42 defines.

The examiner erroneously argues, in the paragraph bridging pages 12 and 13 of the Examiner's Answer, that appellants' previous argument regarding the requirement for Chao et al. to have a soft etch is irrelevant because the claims are open ended. This argument was advanced by appellants to show advantages of the claimed method over the method disclosed by Chao et al.. These advantages are set forth in part I of this paper. The need by Chao et al. for the soft etch indicates Chao et al. did not have

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possession of the concept of gradually changing the power applied to the etchant while a rounded corner is being formed.

**C. Appellants' response to examiner's Response to Argument vis-à-vis the rejection under 35 USC 103 based on Bhardwaj et al.**

The first full paragraph on page 13 and the last full paragraph on page 14 of the Examiner's Answer ignore the fact that a reference must be interpreted by the words and concepts it employs. It is improper for the examiner to argue that a reference has a feature that is contrary to the disclosure of the reference. There is no answer to the argument appellants advanced that Bhardwaj et al. is concerned with etching a trench sidewall, as indicated at column 1, lines 41 and 42, and that Bhardwaj et al. has no disclosure of a desired shape being a portion of a trench sidewall.

The second paragraph on page 13 of the Examiner's Answer alleges that appellants have employed open ended language that does not limit the invention to only the claimed steps and that additional steps not mentioned in the claims can also read on the claimed invention. This statement was made to support the examiner's position that the disclosure by Bhardwaj et al. of alternating etching and deposition steps can meet appellants' independent claims 47 and 59.

The position of the examiner in this regard ignores the language of claims 47 and 59. Claim 47 requires the AC etchant plasma to always be the dominant material applied to the workpiece while the desired shape is being formed. In Bhardwaj et al., the desired shape is the trench sidewall that is formed by alternate etching and deposition steps. Hence, in Bhardwaj et al. the desired shape is not formed by an AC etchant plasma always being the dominant material applied to the workpiece. Claim 59 includes language similar to that employed in claim 47 by indicating the AC etchant plasma is applied to the workpiece while a desired shape of the workpiece is being formed and the AC etchant plasma is always the dominant material applied to the

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workpiece while the desired shape is being formed. Based on the foregoing, the allegation in the second full paragraph on page 13 of the Examiner's Answer that the features upon which applicant relies are not recited in the rejected claims is inaccurate. (The paragraph bridging pages 13 and 14 of the Examiner's Answer is essentially a duplication of the second full paragraph on page 13).

The argument in the first full paragraph on page 14 of the Examiner's Answer ignores the argument set forth on page 18 of appellants' original Brief that the alternate etching and deposition steps of Bhardwaj et al. occur in the same region along the trench wall. Appellant has provided unrefuted rationale to support this position.

The last sentence in the first full paragraph on page 14 states: "Furthermore, note the new grounds of rejection with respect to claims 47-86 using the Chao et al. reference." While appellants are not sure what this sentence means, it appears to indicate that the examiner is somewhat unsure of the rejection primarily based on Bhardwaj et al.. Otherwise, why would the examiner have referred to Chao et al. while discussing a rejection based on Bhardwaj et al.?

The discussion of the dependent claims in the paragraph bridging pages 14 and 15 and the first full paragraph on page 15 of the Examiner's Answer has been adequately argued by appellants in the original Brief.

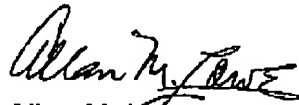
Reversal is in order.

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To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

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